

WHAT IS CLAIMED IS:

1. A process for the production of dinitrotoluene by the two-stage nitration of toluene, comprising
 - 5 a) in a first stage,
 - (i) reacting toluene adiabatically with nitrating acid, wherein at least 90% of the toluene is reacted off and no more than 70% of the toluene used reacts to form dinitrotoluene,
 - (ii) separating the organic phase containing mononitrotoluene and the aqueous acid phase containing sulfuric acid,
 - 10 (iii) concentrating the aqueous acid phase containing sulfuric acid by flash evaporation
 - and
 - (iv) recycling the resultant concentrated sulfuric acid into the reaction in the first stage, the reaction in the second stage, the vacuum evaporator in the second stage, or a combination thereof; and
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 - b) in a second stage,
 - (i) completely reacting isothermally the organic phase containing mononitrotoluene from the first stage with nitrating acid,
 - 20 (ii) separating the organic phase and the aqueous acid phase containing sulfuric acid,
 - (iii) concentrating the aqueous acid phase containing sulfuric acid by vacuum evaporation,
 - 25 and
 - (iv) recycling the resultant concentrated sulfuric acid into the reaction in the first stage, the reaction in the second stage, or a combination thereof.

2. The process of Claim 1, wherein in a)(i) the adiabatic reaction of toluene with nitrating acid, at least 98% of the toluene is reacted off and up to 50% of the toluene used reacts to form dinitrotoluene.

3. The process of Claim 1, wherein the organic phase from a)(ii) contains no more than 10 wt.% of toluene and no more than 70 wt.% of dinitrotoluene.

4. A process for the production of dinitrotoluene by the two-stage nitration of toluene comprising:

a) in a first stage,

(i) reacting toluene adiabatically with nitrating acid, wherein at least 90% of the toluene is reacted off and no more than 70% of the toluene used reacts to form dinitrotoluene,

(ii) jointly concentrating the organic phase containing mononitrotoluene and the aqueous acid phase containing sulfuric acid from the first stage by flash evaporation,

(iii) separating the organic phase containing mononitrotoluene and the aqueous acid phase containing sulfuric acid,

and

(iv) recycling the resultant concentrated sulfuric acid into the reaction in the first stage, the reaction in the second stage, the vacuum evaporator in the second stage, or a combination thereof;

and

b) in a second stage,

(i) completely reacting isothermally the organic phase containing mononitrotoluene from the first stage with nitrating acid,

(ii) separating the organic phase and the aqueous phase containing sulfuric acid,

(iii) concentrating the aqueous acid phase containing sulfuric acid by vacuum evaporation,

and

- (iv) recycling the resultant concentrated sulfuric acid into the reaction in the first stage, the reaction in the second stage, or a combination thereof.

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5. The process of Claim 4, wherein in a)(i) the adiabatic reaction of toluene with nitrating acid, at least 98% of the toluene is reacted off and up to 50% of the toluene used reacts to form dinitrotoluene.

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6. The process of Claim 4, wherein the organic phase from a)(ii) contains no more than 10 wt.% of toluene and no more than 70 wt.% of dinitrotoluene.

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7. The process of Claim 4, wherein the aqueous acid phase containing sulfuric acid from the second stage is extracted with an organic phase containing mononitrotoluene from the first stage before the vacuum evaporation.